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ABSTRACT

Although many students and teachers may believe otherwise, answer changing can be helpful in test taking. This study examined the effects of having a teacher lecture on answer changing as a beneficial test strategy. Participants (N=470) were college students randomly assigned to intervention or nonintervention treatments. In the intervention treatment, students heard a lecture on effective study techniques which included a discussion on the answer changing myth and detailed strategies under which answer changing was advisable. The non-intervention control group received no discussion of the answer changing myth. Two tests were reviewed for answer changes by observing erasures and crossouts. No significant differences were found between the two groups. A reason for this could be that although students believe it is not a good idea to change answers, they do so anyway. It is also possible that only an individualized intervention might have an effect. Since answer changing had less than a one percent net gain for students in this study, performance enhancing resources might be better spent in other ways. (ABL)

The Effects of an Educational Intervention on Answer Changing Behavior

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ABSTRACT

Embedded within a lecture on effective study techniques given after the first exam of a course, the treatment group (n=77) heard a discussion on answer changing research and strategies. Answer changing on the pre-intervention first exam was compared with answer changing on the post-intervention course exam. Compared to the performance of a control group (n=87) there were no effects attributable to the intervention. The results are interpreted from the vantage point of both lack of consistency between student beliefs about answer changing and actual answer changing behavior as well as resistance to attitude change. The practical importance of answer changing behavior is questioned.

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Although there is ample evidence that answer changing can be helpful in test taking (e.g. Range et al., 1982, Benjamin et al., 1984), the majority of test takers still erroneously believe that changing an initial answer will not lead to an improvement in test scores (Foote & Belinky, 1972 and Benjamin et al.,1984). Benjamin et al. found that this belief is reinforced by instructors, who either fail to point out that answer changing is a useful strategy or actually warn their students not to change their initial answers. It appears that both students and their instructors are ignorant of the research which refutes the answer changing myth.

If instructors are maintaining this false belief, then it is possible that instructors could encourage students to judiciously use answer changing behavior to improve their

scores. Very little research, however, has been conducted to determine the effect of instructor encouragement. Foote & Belinky (1972) informed a group of students of the actual percentages of favorable, unfavorable, and neutral changes that were made by the students on two previous tests. This feedback had no effect on the students' frequency of answer changing on a subsequent test.

The current study examined instructor encouragement but changed the type of encouragement from the feedback used by Foote and Belinky to an educational intervention. The primary purpose of this study was to determine if a classroom lecture which included a thorough examination of the myth and a careful discussion of answer changing as a beneficial test taking strategy would have any effect as an educational intervention on subsequent answer changing behavior.

METHODOLOGY

One hundred sixty four students in a large general psychology course (total n = 470) were enrolled in six of the author's recitation sections which met one hour per week for supplementary lectures, demonstrations, and

administrative activities such as returning and discussing multiple choice examinations which had been previously taken in a large lecture hall with the entire class of 470 students.

The recitations were randomly assigned to intervention or nonintervention treatments. The answer changing intervention was embedded in a 50 minute lecture which covered effective study techniques including such topics as time management, scheduling, notetaking, text reading, and a number of specific test taking strategies (e.g. Pauk, 1984). The discussion of answer changing described the myth of staying with an initial answer, reviewed the results of published research as well as the results of unpublished research conducted with previous course recitations which demonstrated that answer changing was a successful strategy when used in this particular course, and then detailed specific strategies for determining the conditions under which answer changing was advisable. The control group was presented the same lecture on effective study techniques, but the discussion about answer changing was deleted.

The effective study technique lecture was given after the first test of the term. Prior to the return of the tests to the students, each test was carefully reviewed to

determine the number of changes and direction of change (wrong to right, wrong to wrong, and right to wrong). Changes were determined by observing erasures and crossouts. In a review of the literature, Benjamin et al.(1984) report that this method produces high interobserver reliability. Prior to returning the second examination to the students, the tests were assessed for answer changes.

RESULTS

The combined sample averaged 1.83 answer changes per 50 questions on the test preceding the intervention, with an average of .87 wrong to right, .48 right to wrong, .48 wrong to wrong. The average test score for the sample was 34.9, which was almost identical to the average of 35.0 for the entire class of 470 students. The control group had a first test average of 34.3 and the treatment groups had an average of 35.6. The difference was not significant ($t=1.21$, $p=.23$).

Table 1 compares answer changing categories between the two groups. There were no significant differences.

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insert Table 1 about here

Table 2 summarizes group comparisons on the second examination. Again there were no significant differences between the two groups.

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insert Table 2 about here

To determine if the intervention changed individual, rather than group distributions, and to reduce the effect of subject-to-subject variability, the data was analyzed using a paired sample t-test (Nie et al., 1975) and is reported in Table 3. Using the individual as the level of analysis, both groups made nonsignificant changes in increasing the number of wrong to right answers and decreasing the number of right to wrong answers.

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insert Table 3 about here

DISCUSSION

The results of this study indicate that this educational intervention had no visible impact on answer changing behavior. These results are consistent with Foote & Belinky's (1972) findings that their feedback intervention did not appear to have an effect on answer changing behavior.

Although it is possible that the content of the intervention was not well communicated via the lecture, this particular lecture had been refined several times and usually received especially positive comments during student evaluations of the course. A more plausible explanation may lie in the initial tenuous relationship between answer changing beliefs and answer changing behavior. In practice it appears that this myth/belief has little affect on answer changing behavior. For example, Ballance (1977) found no relationship between belief about answer changing and subsequent answer changing. Benjamin et al. (1984) found most students change test answers, and in this study 71% of the students changed at least one answer. Even though students believe it is not a good idea in general to change initial answers, they apparently are willing to change

answers under a wide variety of conditions. Because so very few people indiscrimately behave within the prescription of this myth, the intervention may have simply identified some of the legitimate reasons they had already applied in previous tests. As a result, interventions designed to promote answer changing may be impractical because so many students are in fact already changing answers.

Since so many students change answers in contradiction to prevailing attitudes, it may well be that this kind of intervention would only be effective on those students who initially do not change answers. To pursue this possibility, an additional analysis was conducted which focused on those students who changed no answers on test 1. These students did change more answers on the second examination, but the nonintervention group nonsignificantly changed more answers (1.33 vs .88), and the results appear to demonstrate a "regression towards the mean" effect.

A possible reason for the lack of an intervention related increase in answer changes in this more possibly relevant group may be that as Slovic et al. (1981) have pointed out, there are a wide set of beliefs which are very resistant to change even with information. From this vantage point, only an individually tailored intervention

which tracks the student, identifies how she/he assigns confidence in an answer, identifies personal decisional characteristics of hunches, etc., and then uses behavioral performance as personalized evidence, will be successful. As Skinner (1983), Best (1979) and Benjamin et al. (1984) have found, little research has been done on these factors.

Since answer changing makes up such a small effect in test taking, less than 4% of the questions in this study were changed, with less than 1% net gain (.39 of a question), such an investment for enhancing performance could perhaps be better spent elsewhere, or at the most, included as only a small component of a more comprehensive approach to increasing performance on tests.

TABLE 1

Pre-Intervention
Answer Changing

	Control (n=87) mean	Intervention (n=77) mean	t*	prob**
Wrong to right	.80	.94	.78	.44
Wrong to wrong	.40	.51	.86	.39
Right to wrong	.47	.49	.18	.86

* df=162
**two-tailed

TABLE 2

Post Intervention
Answer Changing

	Control (n=87) mean	Intervention (n=77) mean	t*	prob**
Wrong to right	1.01	1.03	.07	.94
Wrong to wrong	.47	.32	-1.25	.21
Right to wrong	.37	.44	.69	.49

* df=162
** two-tailed

TABLE 3

Within Group Changes

	Pre	Post	difference mean	t	prob
Control Group					
Wrong to right	.81	1.01	-.21	-1.14	.26
Wrong to wrong	.40	.47	-.07	- .58	.56
Right to wrong	.47	.36	.10	.95	.34
Intervention Group					
Wrong to right	.94	1.03	-.09	- .56	.58
Wrong to wrong	.51	.33	.18	1.83	.07
Right to wrong	.49	.44	.05	.55	.58

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